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The Concept of Binary Evaluation of Freight Quality Partnership Impact on the Principles of Sustainable Urban Development

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Abstract

The purpose of this paper is to present the nature, key features and characteristics as well as identification of barriers and conditions connected with Freight Quality Partnership implementation aimed at realising the idea of sustainable urban development. FQP is assumed to constitute a strategic platform of cooperation between all Stakeholders, to facilitate integrated activities aimed at mitigating negative effects generated by urban freight transport. In order to obtain this epistemological goal, the case study method and good practices analysis were predominantly applied. To reach the cognitive goal, in turn, the empiric research was based on the so-called "Stakeholder Pyramid" model. Based on the indicated binary approach, i.e. on decision-makers' perspective, applying the expert method and the focused optics of beneficiaries, i.e. surveying the physical suppliers who focus expectations of both freight senders and recipients (traders and service-providers), we were able to obtain a precise picture of the urban freight transport in Szczecin. The final effect of this article is proposing an original concept for evaluation of the Freight Quality Partnership implementation, taking the form of the "Sail Model" that should become a recommendation for this type of partnerships. It is based on assessing the quality of this intervention (*merit–quality*) and its value, perceived predominantly in economic categories (*worth–value*).

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Keywords: urban logistics, urban freight transport, freight quality partnership evaluation model.

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1. Introduction

The observed fast urban development makes decision-makers notice more and more often that besides the problems related to passenger transport optimisation it is also important to overcome the difficulties connected with organising freight transport and distribution, especially in city centres. This comes in hand with strong emphasis put on the idea of sustainable urban freight transport, which becomes one of the determinants of a new approach to European conurbations functioning. Therefore, the main challenge is to promote ecologically sensitive, effective, economical and safe freight transport that meets the needs of local communities and businesses. The main goal of the Freight Quality Partnership (FQP) is to develop the general level of knowledge and better understanding of freight transport issues, supported by promotion of good practices, and implementing effective solutions that accommodate individual stakeholders' needs in the area of increasing the availability of goods and services while respecting the environmental and social conditions (Lindner, Lückenkötter 2012).

FQP is a special kind of a partnership combining public and private entities, whose main task is ensuring sustainable growth of freight transport in cities while meeting expectations of various stakeholder groups and reconciling them with a city's or region's overarching strategic goals (Allen et al. 2010). A FQP is established most often by: local authorities, freight transport industry, local businesses, local community, environmental organisations and other interested parties. Its aim is to develop a possibly full and consensual understanding of freight transport issues and problems, to promote constructive solutions which reconcile the need for access to goods/services with the local environmental and social concerns. The main task of FQP is integrating the cooperation between municipalities, transport operators, entrepreneurs, environmental organisations and other interested parties, which forms the basis for developing a collection of best practices for freight transport to make it more ecological, economical, safe and efficient (Allen, et al. 2007), and thus optimally serving the needs of local businesses and communities. Judging from experience gained by the cities that have implemented FQP, its proper functioning is dependent mainly on (Allen, et al. 2010):

- keeping its members interested
- acquiring financial resources
- attracting new stakeholders.

From the FQP efficiency perspective, there are three key groups of urban freight transport (UFT) stakeholders. The first one is Inhabitants (I) who represent the specified consumer needs for goods and services. Additionally, the Inhabitants represent a specified maturity level in terms of sustainable growth principles. It is the demand side for both goods and ideas. The second group is Business (B) which in response to the demand offers supply of specific goods and services. Their readiness to supply is then converted into deliveries made by logistic operators for whom the B2B relation requirements are translated into a logistic task specification, in which the logistics suprastructure and infrastructure are of key importance. Finally, the third group is Municipalities (M) who implement a specified strategy of the city through, inter alia, its logistic policy (e.g. shaping the urban logistic infrastructure). “The Pyramid of Stakeholders” is presented in Fig. 1.

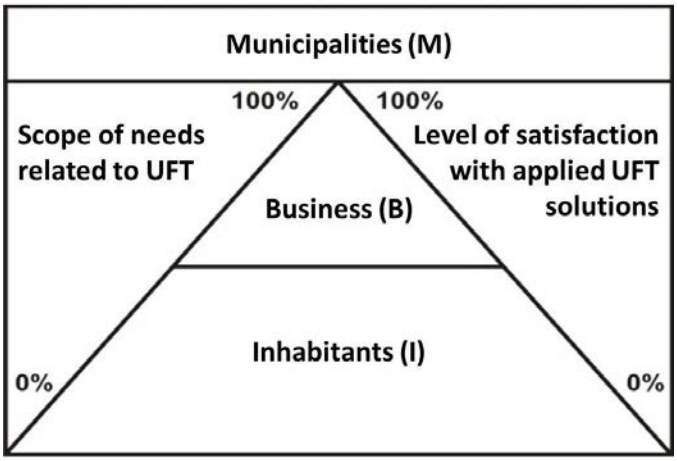

Figure 1. "The Pyramid of Stakeholders" model.
Source: own study.

2. Freight Quality Partnership (FQP) Rationale

2.1. Freight Quality Partnership (FQP) Priorities

In order to effectively balance the supply of goods and the real demand, it is necessary to develop an Urban Freight Transport system focused on three key priorities, i.e. time, quality and costs. These logistic priorities should be central to intelligent Delivery Logistics, which should also accommodate the Inhabitants' need for mobility and the assumptions of the Freight Quality Partnership whose leading partner is the Municipalities. Additionally, the full, positive vector orientation which characterises the idea of sustainable development (Economy, Society and Environment), will make it possible to achieve beneficial (positive) results in each of the areas both separately as well as in terms of synergy.

In urban logistics, the key issue is sustainable development of urban freight transport. The growing social and environmental awareness extorts initiation, implementation and sustaining the effects of many targeted projects. Therefore, the main challenge for this area of human activity is to strive for a possibly vast promotion of ecologically sensitive, effective, economical and safe freight transport which meets the needs of local communities and businesses.

When analysing the practical measures taken so far in many European cities, one may have the impression that essentially they boil down predominantly to the pull measures (i.e. secondary reaction to an impulse) and to preliminary initiation of the idea of public-private partnership, however, without formalising its final form. The practice observed in many cities proves that this traditional approach in a typical project most often boils down to:

- analysis of good practices in Europe and elsewhere,
- evaluation of the possibilities to apply a concrete solution in a given city (identification of main barriers and conditions),
- taking selected actions aimed at popularisation (advertising campaigns) and working out a set of recommendations which, however, are most often generalised and too often addressless by nature.

Therefore, this means that most often the actions come down merely to identification (copied in numerous projects) of the initial situation with regard to Urban Freight Transport (UFT), analysis and evaluation of its functioning, proposing a set of synthetic recommendations, attempting to initiate selected solutions, but first and foremost their popularisation, most often without a distinct final effect.

(Question 1) Thus, the fundamental question arises about the purpose of making this effort, as it tends to come down to an attempt to find an answer to the question: "is it possible to have urban freight transport, at the same time limiting noise and pollutants emissions and ensuring fluent traffic in the city", which in result will come down to obtaining an answer such as: "yes, rather yes, no", and also "I think, I'd expect, I'd like, etc.".

2.2. Examples of good practices in the area of Freight Quality Partnership (FQP) implementation

Freight Quality Partnership is established in the form of a public declaration of stakeholders to take responsibility for sustainable growth of urban freight transport, the main purpose of which is to enhance the level of knowledge and understanding of freight transport problems, supported by promoting of good practices in combination with implementing effective solutions. However, the focused set of targeted actions must take into account to the fullest possible extent the needs of individual stakeholders along with synergistic effects so as to achieve a stable growth of goods and services availability, respecting as fully as possible the environmental and social conditions.

A fast growth of such partnerships is now observed in the UK, where the local authorities have established FQPs in numerous cities and regions (Kijewska *et al.* 2012). One of the first was Hampshire Freight Quality Partnership which came into being on the basis of the agreement signed on 13 January 2000 (Allen et al., 2010). Since that time, 87 partnerships were established in the UK, out of which 58 are still functioning (A guide… 2016,). One of the most important solutions of this type is a conglomeration of several London's FQPs comprising (http://www.londonsfqps.co.uk):

- Central London FQP
- West London FQP
- South London FQP
- Brimsdown FQP
- Thames Gateway FQP.

Following the British example, "Charter of Good Practice for Transport and Goods Delivery" was signed in Paris in June 2006, being an attempt to adapt the FQP concept to a greater extent. It was signed by 47 signatories including local self-government representatives as well as institutions and associations of transport and logistic companies and 23 firms dealing with deliveries (e.g. DHL, TNT Express, UPS) as well as with wholesaling and retailing (La Charte de bonnes pratiques des transports et des livraisons de marchandises dans Paris, Paris 2006).

An interesting example of an efficiently operating partnership is Tyne and Wear Freight Quality Partnership. The reason for establishing this partnership was the increasing problems connected with transport in the area of Tyne and Wear metropolitan county (Fig.2). The major city of the partnership is Newcastle upon Tyne, which is also the seat of the institutions governing the FQP. It was established in 2005, and its main partners include the local authorities (Newcastle City Council, Gateshead Council, Sunderland City Council, North Tyneside Council and

South Tyneside Council), carriers' associations, logistic operators, road administrators, two local universities and NECTAR organisation (http://www.tyneandwearfreight.info).

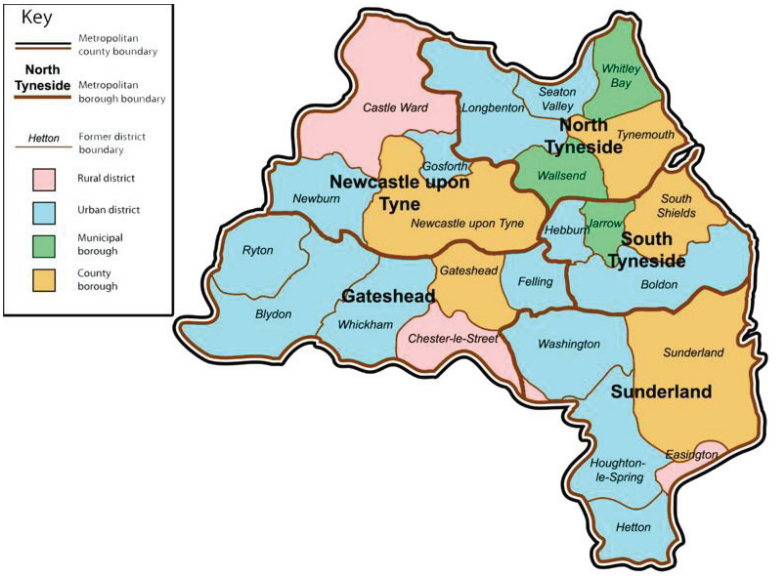

Figure 2. Tyne and Wear metropolitan county
Source: (http://en.wikipedia.org/wiki/Tyne_and_Wear)

A very important communication tool for the Tyne and Wear Freight Quality Partnership is the website available in the following languages: English, German and Polish (Fig. 3). It provides the stakeholders, carriers and logistic companies with various information regarding the current road conditions in the partnership territory, and serves as a platform for exchanging knowledge and information. Especially important are interactive maps with data regarding e.g. traffic limitations or preferred routes. Selected maps (currently 25) enable interactive optimisation of transport routes.

An interesting tool made available at the website is the Multi-Modal Carbon Calculator which can be used in the whole country. This is a special web application that makes it possible to optimise freight transport throughout the territory of Great Britain, taking into account road, rail and sea transport. This optimisation also accounts for the level of pollution generated by the means of transport, which is connected with both mode of transport applied and the characteristics of the transported cargo (mainly its weight).

The partnership also takes measures in connection with improving the road signs, pointing out any difficulties and errors and making suggestions on the road signs correction. Additionally, the partnership gets engaged in various European projects, such as C-LIEGE project implemented under the Intelligent Energy – Europe programme.

The partnership has also initiated implementation of the Fleet Operator Recognition Scheme – an interesting solution to promote energy-efficient and environmentally-friendly urban freight transport.

Figure 3. Website of the Tyne and Wear Freight Quality Partnership
Source: (http://www.tyneandwearfreight.info).

2.3.FQP functioning in the city of Szczecin

Under the on-going GRASS project (GReen And Sustainable freight transport Systems in cities) in Poland, an experimental implementation of a Freight Quality Partnership is under way in Szczecin (http://grassproject.eu). In order to evaluate effectiveness of this undertaking, it was necessary to develop the underlying assumptions for the methodology of measuring the efficacy of such partnerships implementation. It was assumed that the key element necessary for achieving a success and long-term sustainability of positive effects of FQP functioning is a systemic approach to evaluation, and application of analytical tools based on the division of evaluation parameters into two groups referring to the quality of the actions taken in terms of their implementation process and economic effectiveness resulting from the implementation.

As part of the functioning of the Freight Quality Partnership in Szczecin, the partners first and foremost exchange information and experience, and also initiate projects regarding transport issues in their broad sense. Working meetings are usually held in the form of the so-called “round tables”, at which the individual stakeholders present their problems and try to work out consensus solutions, to ensure meeting their expectations (based on the achieved compromise). An important area of FQP activity is the research work and analyses regarding urban freight transport functioning.

As important acitivity of FQP functioning in Szczecin was the survey realized in the first half of June 2015. A pilot study was done involving two groups of respondents: 300 drivers delivering goods to delivery points in the centre of Szczecin and 300 inhabitants of the area in question. The study was aimed at getting to know the opinions of the respondents directly involved in making deliveries in the area of Szczecin. Using the methodology worked out under the C-LIEGE project (Brandt, Eibner 2011; Bourn, MacDonald 2012; Lindner, Lückenkötter 2012), it was possible to collate the major problems identified in the project with the identified impediments regarding deliveries in Szczecin city centre (Fig. 4).

Figure 4. Szczecin city centre
Source: own study.

The study results were presented during a round-table meeting attended by various UFT stakeholders in Szczecin, including local administration representatives. Table 1 shows the key problems indicated by the first respondent group. As the survey has shown, the greatest hindrance in the city centre was poor availability of parking spaces for loading and unloading operations, and of parking spaces dedicated for delivery vehicles (as many as 98% of the respondents assigned the highest priority to this problem). Another hindrance, indicated by 82% of the respondents, was insufficient space to park delivery vehicles. The third priority was conflicts with other road users (connected mainly with hindrances in the course of loading and unloading operations). The presence of heavy-duty vehicles in the studied area, resulting from the substantial transit traffic in Szczecin, was found less onerous by the respondents. A similar opinion was given with regard to insufficient legislative support manifested mainly by the lack of legal regulations accommodating the needs of freight transport (such as, for example, decreased parking fees for vehicles in the course of delivery-making).

Table 1. Major problems connected with goods deliveries in Szczecin city centre

Problem with delivery-making	Grade (weight)					Weighted
	1	2	3	4	5	average
Poor availability of parking spaces for loading and unloading operations, and parking spaces dedicated for delivery vehicles			2%	5%	93%	98%
Insufficient space for parking delivery vehicles			4%	14%	82%	96%
Conflicts with other road users			3%	91%	6%	81%
Presence of heavy-duty vehicles on the streets		2%	6%	89%	3%	79%
Inappropriate or insufficient legal regulations		4%	2%	89%	5%	79%
Too much traffic in the city			37%	55%	8%	74%
Restricted access to some city zones for delivery vehicles	6%	7%	65%	22%		61%
Too narrow streets		82%	16%	2%		44%

Source: own study.

For the surveyed drivers, the limited access zones for delivery vehicles in the city centre were not very onerous. Undoubtedly, this is due to the fact that there are relatively few such zones in Szczecin, which results

mainly from the city morphology. The least onerous factor according to the respondents was the limitations resulting from too narrow streets.

Another surveyed group consisted of 300 city centre inhabitants picked at random. In the survey they were asked to answer questions regarding:

- the respondent's age (Table no. 2)
- perceived problems connected with onerousness of freight transport in their place of residence (Table no. 3)
- solutions to eliminate the onerousness (Table no. 5).

The biggest respondent group was made up by persons aged 41-50 (79 persons), the smallest – people aged 20 and younger (17 persons).

Table 2. Respondents' age structure

Age:	Number of respondents
20 and younger	17
21-30	52
31-40	65
41-50	79
50-60	66
60 and older	21
Total	300

Source: own study.

51% of the respondents declared that deliveries made in their place of residence were very troublesome. 35% of them did not find freight transport particularly onerous, and 14% did not even notice any impact of freight transport on their place of residence. 62% of the respondents aged 41-50 and 50-60 thought the deliveries made in their place of residence were very onerous (Table 3).

Table 3. Perception of UFT-related problems

Age:	I don't notice any	It's a little onerous	It's very onerous
20 and younger	5%	84%	11%
21-30	19%	23%	58%
31-40	17%	44%	39%
41-50	12%	26%	62%
50-60	11%	27%	62%
60 and older	4%	59%	37%
Total	14%	35%	51%

Source: own study.

Having eliminated from the survey those people who don't notice any problems with UFT in their place of residence, the next questions were posed to the remaining 258 respondents. As a result, problems regarding goods deliveries made in the respondents' place of residence were mainly connected with blocking entrances and passages by delivery vehicles during unloading (86%) and blocking the parking spaces (83%), as well as blocking the traffic lanes (69% responses). Other examples of onerousness included obscuring pedestrian crossings (9% responses – mainly among respondents above 60 years of age). The hierarchy of the problems is shown in Table no. 4.

Table 4. Problems generated by delivery-making in the city centre

Problem with delivery-making	%
Traffic restrictions (congestion)	78%
Blocking parking spaces	83%
Blocking traffic lanes	69%
Blocking entrances and passages	86%
other	9%-

Source: own study.

When selecting the solutions to mitigate the onerousness of delivery-making in the studied area, the respondents most often indicated provision of unloading bays (86%), while 79% of them made a reservation that the unloading bays should not take up their parking spaces. Table no. 5 presents the selected proposals to solve the delivery-related problems in Szczecin city centre.

Table 5. Proposals to streamline UFT in Szczecin city centre

Proposed solution	%
Unloading bays	86% (79% if they do not take up our parking spaces)
Night deliveries	36% (too much noise)
Deliveries made within specific hours	76%
None	9%

Source: own study.

On 17 November 2015, under the GRASS project, the brainstorming method was applied for the stakeholders participating in the "round table" meeting (Appendix no.1), helping to generate many various ideas which were then systematised. Using the affinity diagram tool, a relationship network was drawn up for them. Fig. 5 presents the identified groups of postulative solutions regarding UFT in Szczecin

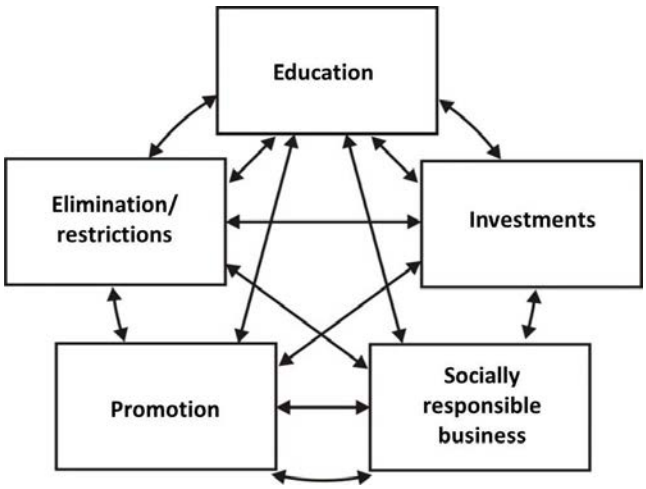

Figure 5. Groups of proposed solutions to streamline UFT
Source: own study.

3. The problem of FQP evaluation in terms of quality and value

The observed tendency for paradigm changing in connection with the fast-growing awareness of communities that start reacting actively to the deterioration of the natural environment has led to forming a certain group of reaction indicators. This regards the following problem groups:

- pressure/ reasons referring to the cause and the reasons underlying the problem
- the state of outcomes, leading to specifying the condition and importance of the problem
- reactions that make it possible to specify the instruments for problem solving and way of reacting.

The innovative approach promoted in this article emphasises the mode of reaction and is based on changing the approach to FQP evaluation via activating ex-post assessments in two key areas, i.e.:

- quality of intervention (merit–quality) connected with the project implementation,
- its value measured in economic categories (worth–value).

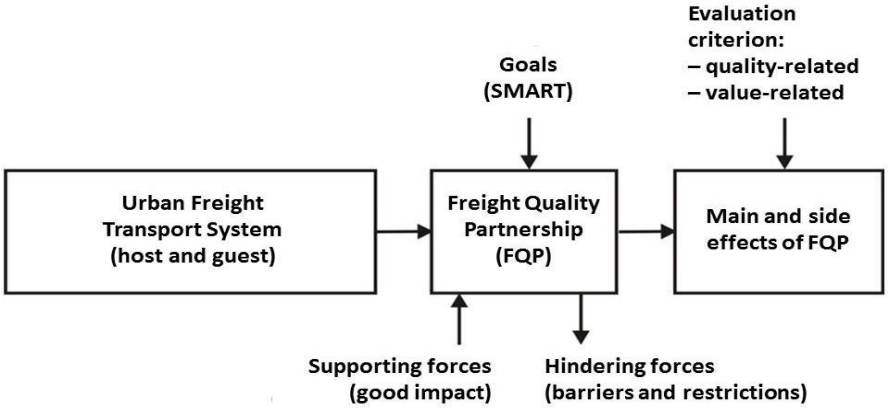

Figure 6. The general concept for evaluating Freight Quality Partnership effectiveness
Source: own study.

Fig. 6 shows the general concept for evaluating Freight Quality Partnership effectiveness, which always results from selecting the most realistic goals with regard to UFT optimisation, whereas the goals must be SMART (i.e. Specific, Measurable, Achievable, Realistic and Timed). At the stage of forming, functioning and sustaining the effects, it is subject to the impact of the *supporting forces* (positively influencing FQP) and the *hindering forces* (which result from a number of barriers, conditions and restrictions). However, it is of key importance that we are able to objectively evaluate FQP effects, both main and side effects. Therefore, in line with the concept it should be assumed that the general approach to FQP effectiveness evaluation should be treated like a specific kind of intervention in the conurbation area and in its *freight transport system* (along with the *goods transport system*, which results from the fact of transporting cargo to/ from the city and transit carriage of goods through the administrative area of the city, organised and provided by third parties). This distinction of transport system in a city makes it possible to distinguish the *host transport system* (freight transport system specific to a given city) and *guest transport system* (i.e. a system managed by other entities, which usually provide freight transport in the host's city. It is at the same time obvious that the transport system in a city is overriding in relation to the sum of goods transport systems. The overarching goal for the host city is a synergistic combination of solutions applied in the city as well as those of external origin, the future solutions as well as present solutions, applied or promoted by the city itself. This approach extorts the need to view the evaluation of Freight Quality Partnership effectiveness in two strategic aspects. Firstly, it is necessary to consider the “quality” criterion (the already mentioned quality of intervention), and secondly, the “value” criterion (making it possible to obtain the economic picture of the intervention taken).

(Question 2) In view of the above, which approach model should be applied so as to effectively analyse the "quality" intervention of FQP, in a way that makes it plausible for the evaluation to succeed?

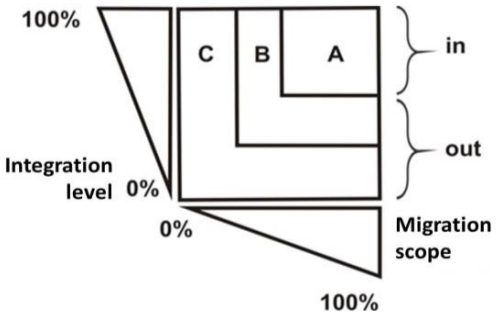

Figure 7. The Integration and Migration model of stakeholder involvement in Freight Quality Partnership (FQP)
Source: own study.

Considering the fact that FQP, being an agreement between stakeholders, is characterised by variable forces integrating the idea and actions, which is degressive in the sequence from A to C, then, as shown in Fig. 7, first it is necessary to evaluate three areas, i.e. ABC, of which the first one is of internal nature (In), and the other two are of external nature (Out). Migration from C to B is particularly expected, as it shows how commonly the local community is involved in any given project. Thus, *the Integration and Migration model of stakeholder involvement in Freight Quality Partnership*, should come down to:

- the strength of enhancing the connections, relations, cooperation, interaction between the participants of FQP initiative (part A),
- the stakeholders activation level, via the level of their involvement in the activities of intervention taken, discussion over its evaluation and further areas of development (part B),
- the stakeholders entitlements scale, via perceivably stronger involvement in co-decision making of those groups that have so far been marginalised (part C).

(Question 3) How to analyse the effectiveness of the „*value*" intervention of FQP? It seems that in the economic dimension it is a simpler issue, as in fact it predominantly comes down to evaluating:

- efficiency regarding maximisation of intervention implementation effects,
- effectiveness of implementing the intervention,
- thriftiness meant as minimising the outlays connected with implementing the intervention.

The last two criteria cover the wider notion of solution efficiency which in accordance with the theory of praxeology is in fact cost-effectiveness. It is commonly assumed that each project, including also a FQP intervention, can be viewed in terms of *organisational effectiveness*, therefore it is justified to distinguish two groups of effectiveness: *economic effectiveness* and *non-economic effectiveness.* It should be noted that the former group regards the principles of rational activity, therefore *effectiveness* from the point of view of organisation theory is treated as an overriding category in relation to concepts such as: productivity, efficiency, profitability, efficacy, and even rationality. That means it should be understood first and foremost as:

- ability to quickly adapt to changes (adaptability indicator), as with the same scope of intervention (width and depth) each facility or city requires a specific time to reach the level comparable to other facilities,
- the city's ability to implement the FQP strategy in a systemic manner, and practical realization of its goals.

Therefore the city, via proliferation of solutions (their multiplication) may obtain the positive outcome: *scale economies*, when the increase in effects of interventions taken with regard to UFT is accompanied by a proportionally lower increase in related outlays (eligible costs). *Scope efficiency*, in turn, regards mainly the possibilities of implementing by the city such a solution mix to support UFT sustainability that is the most effective in terms of costs.

4. The Triangular Sail Model for FQP evaluation

Another issue that seems to be of key importance in view of the observations made so far with regard to intervention implementation practice, pertains to constructing a model for an effective "value-related" analysis of FQP intervention, but in its non-economic dimension. To face this challenge, it seems it is possible to apply the VR (*Value Reporting)* method, which will surely make it possible to reliably measure any non-financial value drivers and relevant intangible values of the project (intervention). Based on this assumption, the set of instruments for assessing the "effectiveness" of non-financial stimulants of the project (intervention) value will include, inter alia:

- project proliferation, externally manifested by observable development of local (urban) eco-market,
- ecological solutions share volume over the whole market of urban deliveries of goods,
- eco-patents and eco-licences obtained by local entrepreneurs,
- the satisfaction level of stakeholders (inhabitants and entrepreneurs),
- number of (both individual and institutional) recipients preferring eco-deliveries,
- volume of R&D expenses regarding eco-solutions to be applied in the city,
- level of qualifications held by eco-managers and their remuneration,
- applied motivation systems for various groups of stakeholders.

It seems that the PSM (*Propensity Score Matching*) method may serve well to analyse the effectiveness of FQP "quality" intervention, which will enable equalisation of the intervention group and the reference group for the implemented project. Then the distribution of the variable, measurable features will be as much as possible similar (balanced) in both groups, which will in turn enable working out a synthetic single value to estimate PS (*propensity score)*, replacing the large set of correlates that overloads the study.

The key concept of evaluation of Freight Quality Partnership effectiveness is based on the approach taking the form of the "Triangular Sail" model. Fig. 8 below shows the logotype of the proposed model.

Figure 8. The Triangular Sail Model logotype
Source: own study.

The proposed original model for evaluation of effectiveness of Freight Quality Partnership implementation is in turn presented in Fig. 9.

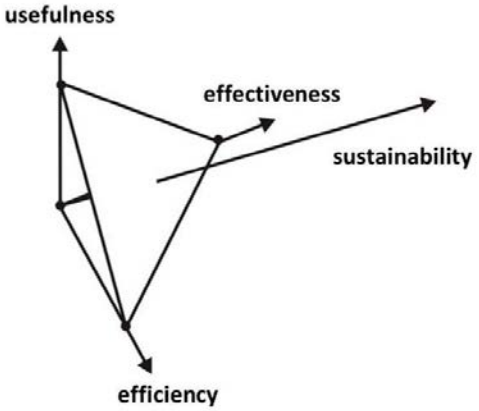

Figure 9. The Triangular Sail Model
Source: own study.

When describing the logical assumptions for the proposed model, it should be noted that its concept is based on „3D" (3 Dimension) approach, i.e. the perspective where vectors are described by XYZ axes, and the three points – usefulness, effectiveness and efficiency – reflect the key criteria and parameters of assessing the "effectiveness" of non-financial stimulants of the project (intervention). Due to the 3D form, they constitute the Triangle Sail Model.

Prior to a detailed discussion of Fig. no. 12 it must be clarified that "usefulness" (vector X) of non-financial stimulants of the FQP project value will include, first and foremost, verification of usefulness of actual effects, via determining the degree of fulfilling *the addressees' expectations* (O_a) and *degree of solving the problems* addressed (R_p). It needs to be noted that the "usefulness" category is the basic principle of utilitarianism, which says that an individual being the addressee (*priority of individualism)* will approve anything that they find useful (subjectively pleasant) for themselves. Referring to the theory of usefulness, in turn, it turns out that each addressee as a decision-maker is entitled to freely express their feelings (*priority of freedom)* and therefore is free to chose the risk level.

$$\boldsymbol{WuX = Oa * Rp}$$

This means that in this group the following aspects should be subject to parametrisation:

- degree of social recognisability of UFT initiatives in the project duration and in the post-project period
- degree of general and individual acceptability of UFT solutions usefulness
- confidence level regarding sustainability of UFT solutions
- degree of compliance with UFT solutions applied elsewhere.

On the other hand, "effectiveness" (vector Y) of non-financial stimulants of the FQP project value will include, first and foremost, obtaining a specified *proactivity level* (P_a) of the FQP level addressees. In this case, the praxeological bases of stimulation to behave rationally should be considered, which means that the addressee is stimulated to get more involved (*priority of imagination*), is more aware of effects of their actions (*priority of awareness*), building an individual area of the value system (*priority of independence* of will).

$$\boldsymbol{W_{sY} = P_a}$$

This means that in this group the following aspects should be subject to parametrisation:

- general number of initiatives regarding UFT in a given period of the project duration
- share of the new initiatives in the general number of initiatives regarding UFT in a given period of the project duration
- indicator of representativeness of individual FQP stakeholder groups in the new initiatives
- indicator of positive associations with the implemented solutions.

Finally, the „efficiency" (vector Z) of non-financial stimulants of the FQP project value will include, first and foremost, verification of the degree to which rational and effective allocation of infrastructural resources (A_i) is ensured, via decreasing any complaints resulting from limited access to or lack of access to those resources by the addressees, thus elevating the well-being (D_a).

$$WwZ = Da/Ai * 100\%$$

This finally means that in this group the following aspects should be subject to parametrisation:

- general value of UFT initiatives taken in a given period of the project duration
- structure of financial involvement of individual FQP stakeholders
- evaluation of pertinence of the expenses incurred for the FQP initiatives taken
- level of positive impact on own budgets or benefits obtained by FQP stakeholders in terms of e.g. time or quality.

Thus, the above presented *three key measures* for evaluation of non-financial stimulants of the FQP project value, based on verification of intervention logics and rationality of the set goals of the project.

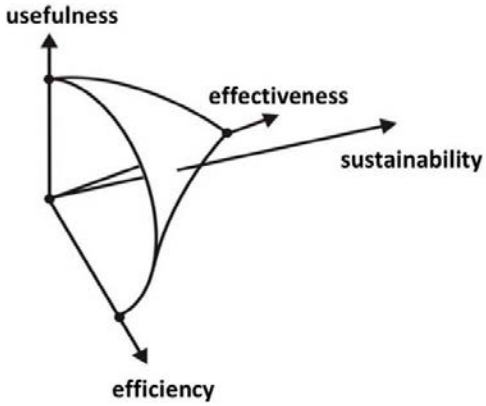

Figure 10. "Time anchorage" management dynamics in the Triangular Sail model.
Source: own study.

Regardless of the points set (anchored) on the XYZ axes, which reflect the current state of FQP interventions, the system is continuously subject to the impact of the time factor due to the passage of time from the date of the project (intervention) completion. Hence, the fourth vector in the arrangement presented in Fig. 10 rly as in Fig. 13), represents the "sustainability" vector marked with letter T. The state of "sustainability" of intervention (project) should be understood as a relative state of stability (over a long period of time) of the attained positive effects the level of their perceptibility by addressees on completing the intervention (or its stages).

After a certain amount of time (t) has passed, the "3D" arrangement existing so far will switch to a new (better) state as a result of slackening the "time anchors" thanks to changing the positions of the usefulness, effectiveness

and efficiency points on the relevant XYZ axes, and from that moment it reflects the current state of "effectiveness" of non-financial stimulants of the project (intervention) value, as shown in Fig. 13.

(Question 3) Hence, a fundamental question arises, whether the „time anchor" may be broken off simultaneously on all the XYZ axes, or one by one, and if so, in what sequence?

(Question 4) Following this line of thought, another question arises: will it be a random sequence or will it be predictable to a smaller or greater degree, and if so, with what probability?

(Question 5) And which of the anchorage points will be the first to break off? Hence, it is fully justified to assign specified weights to the individual vectors so as to attain the FQP project post-interventional effectiveness. The effectiveness management will consist predominantly in relieving the tension by active impact on the individual XYZ vectors. Undoubtedly, this should come down to increasing the level of the parameters described in the individual vectors, being: usefulness, efficiency and effectiveness. It should be noticed here that usefulness is treated as the level of benefits that are absorbed by *active* users (senders, carriers and recipients) and *passive* users (inhabitants, tourists, institutions and authorities).

To see whether the initiative is sustainable, it will be necessary to find out any statistically significant results (applying Pearson's chi-squared test ($\chi 2$) and $\chi 2$ maximum likelihood method (N-W), p-value of $p<0.05$.). What matters here is finding any statistically significant results rather than correlation strength. It will be possible to run the verification in accordance with the "usefulness", "effectiveness" and "efficiency" vectors, as well as with the measures/ indicators proposed for them (four per each group).

According to the logical sequence, the study should first reflect "usefulness", then "effectiveness", and in the end "efficiency".

5. Conclusions

The presented model for evaluating Freight Quality Partnership effectiveness is based on application of the original idea of the Triangle Sail Model in a methodical approach. The model may be considered to sufficiently accommodate the dynamic nature of the post-project (post-intervention) situation, where, as time passes by after the project (project stage) completion, some kind of tension develops and leads to breaking off one or all of the "time anchor" points.

Therefore, taking actions focusing on organising freight transport in the city should be properly reflected in the strategy.

It needs to be emphasised that the principal strategic document adopted by the Szczecin Municipality, named "The Strategy for Szczecin Development 2025" (http://www.bip.um.szczecin.pl/UMSzczecinBIP) , covers the areas of the city development policy (in the social, economic and spatial aspects), which, if supported under the current budget conditions, will contribute to the most effective social and economic development of the city. It is also important that the selection is not closed and there is openness towards other ideas and projects that may be devised by a vast range of the city development stakeholders (both internal and external in relation to the local self-government, including inhabitants, entrepreneurs, investors, institutions, organisations etc.). The direct tool for the "The Strategy for Szczecin Development 2025" implementation is "The Long-term Development Programme for Szczecin" (WPRS) (http://bip.um.szczecin.pl/umszczecinbip/chapter_50827.asp), which is a collection of strategic projects and tasks dedicated to individual strategic goals specified in the Strategy. A Local Freight Development Plan (LFDP) is scheduled to be developed in 2016. It will be a strategic plan focused on freight transport functioning, covering the goals and measures to be taken in the mid- and long-term time horizon. Additionally, it will be based on systematic surveying the needs of local stakeholders, who, as the research has shown so far, aptly recognise many urban delivery problems.

We hope that the proposed model will make it possible to clearly classify the measures and indicators to be used in managing Urban Logistics, in its broad sense, and Urban Freight Transport in particular.

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